Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON, Editor-in-Chief.

MERRITT LYNDON FERNALD, HOLLIS WEBSTER } Associate Editors.

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Vol. 23. December, 1921. No. 276.

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Boston, Mass. 1052 Exchange Building

Providence, R. I. Preston and Rounds Co.

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Subscriptions, advertisements, and business communications to
W. P. RICH, 300 Massachusetts Avenue, Boston, Mass.

Entered at Boston, Mass., Post Office as Second Class Mail Matter.

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 23. December, 1921. No. 276.

NOTES ON NEW ENGLAND HEPATICAE,—XVI.[1]

Alexander W. Evans.

The difficult genus *Scapania* continues to occupy the attention of European students of the Hepaticae, and many new species have been proposed during recent years. Some of these have been accepted without question, others are now regarded as "small" species, while still others have been reduced to synonymy or to varietal rank. In the present paper one of the most distinct of these recently described species, *S. hyperborea*, is recorded from New England for the first time, and it is probable that others will eventually be discovered. The paper records also another species of *Nardia* from New England (making eight in all), lists a series of additions to local state floras and concludes with a revised census of New England Hepaticae.

1. Nardia fossombronioides (Aust.) Lindb. Acta Soc. Sci. Fenn. **10**: 530. 1875. *Jungermannia fossombronioides* Aust. Proc. Acad. Philadelphia for 1869: 220. On moist rocks along the Shepaug River, Washington, Connecticut, August 16, 1921 (*A. W. E.*). New to New England. In 1919 the writer published an illustrated account of this rare species,[2] citing specimens from New Jersey, West Virginia and Illinois. Its discovery in Connecticut extends its known range to the northward, and the following specimens received from Dr. Conklin extend its range to the southward: Winston-Salem, North Carolina, September 5, 1920, *P. O. Schallert 36*, *43*. The plants from the Shepaug River grew in situations which are clearly submerged at certain seasons. When fresh the leaves were

[1] Contribution from the Osborn Botanical Laboratory.

[2] Bryologist **22**: 59. *f. 1–7.* 1919.

decidedly crispate, presenting much the appearance of a *Fossombronia*, and the purple rhizoids increased the resemblance. The only accompanying species was *Marchantia polymorpha*, although *Pellia epiphylla* grew in the near vicinity.

2. Scapania hyperborea Jörgensen, Forh. Vidensk.-Selsk. Christiania **1894**[8]: 56. 1894. *S. irrigua* var. *alpina* Bryhn, Nyt Mag. Naturw. **40**: 6. 1902 (in part). *Martinellia hyperborea* Arnell & Jensen, Naturw. Unters. Sarekgebietes **3**: 97. 1907. On rocks above timber line. Mt. Katahdin, Maine, August 27, 1908 (*A. W. E.*); Mt. Lafayette, New Hampshire, July, 1908 (*A. Lorenz*).[1] New to the North American mainland but previously reported from Greenland by C. Jensen.[2]

This interesting species was first described from male plants collected in Norway. It was overlooked by K. Müller, when he published his monograph of *Scapania* in 1905, but was redescribed two years later by Arnell and Jensen, as indicated in the synonymy. They were able to add an account of the female plant and to cite the species from Sweden, as well as from Norway. In 1915 Müller[3] recognized the validity of *S. hyperborea* as a "kleine Art" and published excellent figures of it. He considers it an arctic species but admits the possibility of its being found on the high mountains of Central Europe. Through the kindness of Dr. Arnell, who has devoted much attention to the European and Siberian species of *Scapania*, the writer has been able to study three Scandinavian specimens of *S. hyperborea*, and these agree in all essential respects with the New England specimens listed above.

The plants grow in dense mats, sometimes in admixture with other Hepaticae, and are distinguished by a brown or reddish brown pigmentation. The somewhat rigid leaves are imbricated and the two lobes, in typical cases at least, arch only slightly or not at all across the stem. The keel is relatively long and is straight or somewhat arched, a narrow entire wing being sometimes present. The dorsal lobe tends to be convex but is sometimes reflexed; it is broadly ovate in outline and usually measures 0.8–1 mm. in length by 0.7–0.9 mm. in width. The apex varies from rounded to bluntly pointed, the margin is entire or vaguely sinuate, and there is little or no decurrence

[1] Listed by Miss Lorenz under the name *S. curta*, Bryologist **11**: 114. 1908.
[2] Meddel. om Grönland **43**: 166. 1910.
[3] Rabenhorst's Kryptogamen-Flora **6**[2]: 415. *f. 121.* 1915.

at the base. The ventral lobe is plane to slightly convex; it has much the same shape as the dorsal lobe but is somewhat larger, measuring (in well-developed leaves) 1.2–1.5 mm. in length by 1–1.2 mm. in width. The apex and margin are like those of the dorsal lobes but the decurrence tends to be somewhat more marked. The median leaf cells of the lobes measure about 20 × 15μ and are marked by large pigmented trigones, usually with bulging sides and often giving the cell-cavities a more or less stellate outline. The cuticle is smooth or nearly so. The gemmae, first described and figured by Müller, are oval bodies, mostly 15–20μ in length and 10–15μ in width. They occur in dense claret-colored masses and are mostly two-celled, although one-celled gemmae also occur. The lobes of the male bracts are almost equal, and the mouth of the perianth is sparingly toothed; otherwise the sexual plants yield no additional characters of importance.

Jörgensen compared his species with the European *S. crassiretis* Bryhn, but later writers have shown that its true relationship is with *S. irrigua* (Nees) Dumort. and *S. paludicola* Loeske & K. Müll. In both of these species trigones are a characteristic feature of the leaf-cells but are much less conspicuous than in *S. hyperborea*. The species are further distinguished by their yellowish green color, pale gemmae and abruptly pointed leaves, although in *S. irrigua* at least rounded leaves also are of frequent occurrence. The keels of the leaves in *S. irrigua* are much like those of *S. hyperborea*, but those of *S. paludicola* are normally wingless and strongly arched.

Although the distinctions emphasized will usually serve to separate these three species without difficulty, certain European forms have been described which seem to connect *S. hyperborea* with its allies. The most important of these are the following: *S. remota* Kaalaas (1898), *S. irrigua* var. *alpina* Bryhn (1902), and *S. paludicola* var. *Kaalaasi* K. Müll. (1915). Müller regards *S. remota* as a variety of *S. irrigua* and reduces the var. *alpina* to synonymy under it; and he includes under the var. *Kaalaasi* some of the Swedish plants which Arnell and Jensen referred to *S. hyperborea*. In a recent letter from Dr. Arnell he writes that he now regards the var. *alpina* as an aggregate, made up in part of *S. hyperborea* and in part of *S. paludicola; S. remota* he considers an unimportant form of *S. irrigua* and the var. *Kaalaasi* as a scarcely more important form of *S. paludicola*. These divergent views clearly indicate that the plants in question are in

need of further study. In the writer's opinion, however, *S. hyperborea* is as worthy of recognition as certain other species of *Scapania* which are accepted without question.

The additions to local state floras, not already mentioned in the preceding pages, are as follows:—

For Maine: *Lunularia cruciata*, Bar Harbor, Mt. Desert (*A. Lorenz*); *Calypogeia fissa*, Seal Harbor, Mt. Desert (*E. L. Rand*); *C. Sullivantii*, Upper Hadlock Pond, Mt. Desert (*A. Lorenz*); *Cephaloziella bifida*, Mt. Katahdin (*A. Lorenz*); *Radula obconica*, Pemetic Mountain Trail, Mt. Desert (*A. Lorenz*); *Scapania paludosa*, Sunken Heath Brook, Mt. Desert (*E. L. Rand*).

For Vermont: *Fossombronia foveolata*, Grand Isle (*A. Lorenz*); *Cephaloziella bifida*, Lunenberg (*A. Lorenz*); *Nardia obovata*, Smuggler's Notch (*A. Lorenz*)[1]; *Plagiochila Austini*, Brandon (*D. L. Dutton*); *Anthoceros crispulus*, Jerico (*A. W. E.*). The Vermont "+" record for *A. punctatus* (see Rhodora **7**: 58, 1905) was based on this last material; *A. punctatus* should therefore be marked in the list with a "−" sign.

The census of New England Hepaticae now stands as follows: total number of species recorded, 194; number recorded from Maine, 148; from New Hampshire, 153; from Vermont, 134; from Massachusetts, 121; from Rhode Island, 79; from Connecticut, 146; from all six states, 63.

Sheffield Scientific School, Yale University.

THE GRAY HERBARIUM EXPEDITION TO NOVA SCOTIA, 1920.

M. L. Fernald.

(*Continued from p. 278.*)

Gaylussacia dumosa (Andr.) T. & G., var. Bigeloviana Fernald, Rhodora, xiii. 99 (1911). Common in boggy barrens and in sphagnous bogs, Yarmouth Co. to Halifax Co.; Cumberland Co.; and collected by others on Cape Breton. See pp. 99, 132, 148.

[1] The earlier Vermont record for this species was based on *N. obscura* (see Rhodora **21**: 160. 1919).

In Newfoundland, Nova Scotia and New England, where *G. dumosa*, var. *Bigeloviana* is distinctively a shrub of wet bogs and sphagnous pond-margins, it seems specifically distinct from typical *G. dumosa* which occurs from Virginia to the Gulf States, where the species is characteristic of dry barrens. In typical *G. dumosa* the upper surfaces of the leaves and of the bracts of the inflorescences are scarcely if at all glandular, the corolla is 5–7 mm. long and the anthers are 2.8–3.5 mm. long, while in the more northern var. *Bigeloviana* the upper surfaces of leaves and bracts are copiously glandular, the corollas are 8–9 mm. long, and the anthers 4–5 mm. long. In order to test these characters in an intermediate area I have borrowed, through the kindness of Mr. Bayard Long, the material of the Philadelphia Academy, including the remarkable collection of the Philadelphia Botanical Club. A careful study of this extensive collection (about 60 sheets) from New Jersey, Delaware and eastern Pennsylvania shows that, while in a large proportion of cases typical *G. dumosa* and its var. *Bigeloviana* are readily distinguished in New Jersey and the adjacent region, there are too many cases in which the characters break down to allow the elevation of var. *Bigeloviana* to specific rank. Thus material from New Texas, Lancaster Co., Pennsylvania, with the copious glandularity of the northern shrub, has the small corolla (6.5–7 mm. long) and the small anthers (about 3 mm.) of the southern; or material from Speedwell, New Jersey, with almost no glands on the foliage, has the large corolla (8.3 mm. long) and the long anthers (4.7 mm.) of the northern very glandular shrub, while almost glandless material from Manchester, New Jersey, has the longest corolla seen (9 mm.). It is clear, then, that, although very definite from southern New England to Newfoundland, var. *Bigeloviana* in New Jersey and eastern Pennsylvania passes by various transitions into typical *G. dumosa*.

VACCINIUM VACILLANS Kalm. YARMOUTH CO.: upper border of cobble-beach of Butler's (Gavelton) Lake, Gavelton. See p. 166. Recorded with doubt by Lindsay.

* V. CORYMBOSUM L., var. AMOENUM (Ait.) Gray. Boggy thickets, spruce swamps and lake-margins, common in southern Digby and Yarmouth Cos.; the foliage commonly lustrous and glabrous except for being hirsute on the veins beneath, but sometimes strictly glabrous and often as densely pubescent as in *V. atrococcum* and sometimes as small as in *V. pennsylvanicum*. The berries are commonly blue with a bloom but occasionally as black as in *V. atrococcum*. See pp. 97, 98, 109.

V. CORYMBOSUM, var. PALLIDUM (Ait.) Gray. DIGBY Co.: wet woods and thickets, Meteghan; swampy thickets and woods by Little Doucette Lake, Hectanooga. YARMOUTH Co.: boggy thickets bordering Trefry's Lake, Arcadia.

PRIMULA FARINOSA L., var. MACROPODA Fernald. ANNAPOLIS Co.: crests of basalt cliffs by Bay of Fundy, near Margaretville. See p 139.

* SAMOLUS FLORIBUNDUS HBK. YARMOUTH Co.: rocky and muddy tidal banks of Tusket River, extending up-stream to Tusket Falls; brackish muddy and gravelly margin of Eel Lake. See pp. 105, 142.

Lysimachia punctata L. Thoroughly naturalized by roadsides in most parts of the province. See p. 95.

STEIRONEMA CILIATUM (L.) Raf. Seen in the western counties only at one station in YARMOUTH Co.: alder thicket, Yarmouth.

** SABATIA KENNEDYANA Fernald, RHODORA, xviii. 150, t. 121 (1916). YARMOUTH Co.: apparently general in the Tusket Valley, above the lower tidal reaches: peaty margin of Kegeshook Lake; very abundant on boggy savannah bordering St. John L., Springhaven; sandy and gravelly margin of Pearl L., Kemptville; wet pockets in sandy and cobbly beach of Fanning L., Carleton; peaty and gravelly border, northwest side of Tusket (Vaughan) L. (flowering plants wholly submerged by high water); wet savannah bordering Butler's (Gavelton) L., Gavelton. See pp. 158, 160, 165, 167.

Macoun recorded *S. chloroides* Pursh (a southern relative of *S Kennedyana*) as on Sable Island, but St. John states (Proc. Bost. Soc. Nat. Hist. xxxvi. 89) that Macoun's material is *Centaurium umbellatum*.

BARTONIA VIRGINICA (L.) BSP. Common in western Nova Scotia. Our collections are as follows. YARMOUTH Co.: cobbly beaches of East Branch of Tusket and of Butler's Lake, Gavelton; open spot in rocky woods near Eel L.; sandy and peaty bog, Sand Pond, Argyle; dry rocky open thickets near Randel L., Argyle; dryish peaty barrens, Lower Argyle. SHELBURNE Co.: dry rocky or gravelly barrens near Clement Pond, Barrington. QUEENS Co.: dry blueberry barrens near Louis L., Port Joli; openings in dryish thickets, Port Mouton; boggy thickets and border of swale, Central Port Mouton. ANNAPOLIS Co.: damp *Polytrichum*-covered sandy plains, Middleton. Recorded by J. M. Macoun, Ottawa Nat. xxiii. 192 (1910) from Lunenburg Co. See pp. 138, 148, 154, 157, 159.

B. PANICULATA (Michx.) Robinson. As already stated (pp. 149, 153, 156), *B. paniculata*, as it occurs in Nova Scotia, is tremendously variable and clearly passes into plants which closely approach the Newfoundland *B. iodandra*. As a result of prolonged but not wholly

satisfying study the following treatment is proposed as the best I can yet arrive at.

Calyx cleft nearly or quite to base: corolla-lobes lanceolate to narrowly oblong, sharply acuminate or at least acute.
Plant yellowish-green, rarely purplish: inflorescence thyrsoid or a simple raceme: leaves and calyx-lobes firm, subulate to linear-lanceolate, yellowish-green or at most purple-tipped: flowers 2.5–5 mm. long: corolla-lobes mostly creamy-white, lance-acuminate, 0.7–1.5 mm. broad: anthers mostly yellowish.....*B. paniculata* (typical)
Plant purplish or fulvous: inflorescence a simple raceme, rarely subpaniculate: leaves and calyx-lobes fleshy or herbaceous; the latter deeper green to purple, lanceolate to oblong: flowers 3.8–6 mm. long: corolla-lobes often purple-tipped or watery-white, lance-oblong, 1.2–2 mm. broad: anthers mostly purple.....Var. *intermedia.*
Calyx cleft (at least on one side) only two-thirds or three-fourths to base; its lobes herbaceous, oblong to ovate: corolla-lobes petaloid, oblong to narrowly ovate, blunt or merely acutish, 1–2 mm. broad.
Racemes simple or dichotomous: pedicels clavate: 2 or 3 calyx-lobes distinct to base: corolla 3–5 mm. long, creamy-white: anthers mostly yellowish.....Var. *sabulonensis.*
Racemes mostly simple: pedicels filiform: calyx-tube 1–2 mm. long: corolla 4–7 mm. long, often purple-tinged: anthers mostly purple.....Var. *iodandra.*

** B. PANICULATA (typical). Wet bogs, sphagnous quagmires, peaty and wet cobbly shores. YARMOUTH CO.: Jassy Lake, Lake Annis; Pembroke Shore; Porcupine L. and Trefry's L., Arcadia; Butler's (Gavelton) L., Gavelton; Sand Pond, Randel L. and Goose L., Argyle; wet barrens, Lower Argyle; St. John L., Springhaven. QUEENS CO.: near Louis L., Port Joli; near mouth of Broad River.

** B. PANICULATA, var. **intermedia**, n. var., plantis purpurascentibus vel fulvescentibus; racemis simplicibus laxis, pedicellis elongatis; foliis calycibusque herbaceis fulvo-viridibus vel purpurascentibus; lobis calycis distinctis lanceolatis vel oblongis; floribus 3.8–6 mm. longis; lobis corollae ochroleucis purpureo-tinctis vel translucentibus lanceolato-oblongis 1.2–2 mm. latis; antheris purpurascentibus. Widely distributed in Nova Scotia. RICHMOND CO.: L'Ardoise, August, 1892, *Walter Faxon.* DIGBY CO.: wet peaty hollows in savannahs along Little River, Tiddville, August 22, 1920, *Fernald & Long,* no. 22,299 (TYPE in Gray Herb.). YARMOUTH CO.: boggy wood-road, Pembroke Shore, October 6, *Fernald & Linder,* no. 22,973; boggy swale by Tusket River, Tusket Falls, August 20, *Fernald, Bissell, Graves, Long & Linder,* no. 22,298; cobble-beach of Butler's (Gavelton) Lake, Gavelton, September 4, *Fernald, Long & Linder,* no. 22,303; sphagnous bog near Argyle station, August 4, *Long & Linder,* no. 22,285; quagmire-pools in barrens near Goose Lake, Argyle, August 4, *Fernald & White,* no. 22,282; wet peaty sloughs in barrens, Lower Argyle, August 11, *Fernald, Bissell, Graves, Long & Linder,* no. 22,287; boggy roadside, Pubnico, September 6, *Fernald,*

Long & *Linder*, no. 22,306. Queens Co.: wet sphagnous spruce bog near Louis Lake, Port Joli, August 17, *Fernald, Long* & *Linder*, no. 22,296; springy sphagnous bog in spruce woods near mouth of Broad River, August 16, *Fernald* & *Bissell*, no. 22,292.

Several collections from eastern Massachusetts to New Jersey are closely similar but less fleshy or herbaceous and with the anthers only tending to purplish, or at first reddish then changing to yellow. These seem to be transitional to var. *intermedia* but not so well defined as the Nova Scotian material.

Var. **sabulonensis** (Fernald), n. comb. *B. iodandra*, var. *sabulonensis* Fernald in St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 89 (1921). The plant of Sable Island is also on the mainland. We have the following collections. Yarmouth Co.: wet sandy and rocky shore of Lake Annis; wet lower peaty and cobbly beach and sphagnous swales bordering Salmon (Greenville) Lake; boggy swale by Tusket River, Tusket Falls; cobbly margin of East Branch of Tusket, Gavelton (transitional to typical *B. paniculata*); wet sandy shore of Great Pubnico Lake.

Var. **iodandra** (Robinson), n. comb. *B. iodandra* Robinson, Bot. Gaz. xxvi. 47 (1898).—Known only from Newfoundland.

* Apocynum medium Greene. Halifax Co.: slaty ledges and cobbly upper beach of Shubenacadie Grand Lake.

A. cannabinum L. Gravels along Shubenacadie R. and Five-Mile R. (Hants).

** Asclepias incarnata L., var. **neoscotica**, n. var., caulibus 3–5 dm. altis, glabris vel sparsissime pilosis; foliis 7–11-jugis ovato-oblongis obtusis vel subacutis glabris vel subtus ad nervos sparsissime setulosis, longioribus 4.5–6.5 cm. longis.—Nova Scotia: wet, lower, gravelly beach of Shubenacadie Grand Lake, July 19, 1920, *Fernald* & *Bissell*, no. 22,318 (type in Gray Herb.); gravelly margin, northwest side of Tusket (Vaughan) Lake, August 20, 1920, *Fernald, Bissell, Graves, Long* & *Linder*, no. 22,319.

Differing from *A. incarnata* in its very short and broad leaves; from var. *pulchra* (Ehrh.) Pers. in its few and short, glabrous or glabrate leaves; var. *pulchra* having 11–21 pairs of longer (the longest 0.9–1.8 dm. long) leaves copiously hairy beneath. See pp. 135, 160.

* *Collomia linearis* Nutt. *Gilia linearis* (Nutt.) Gray. Casual by the railroad, Truro; probably adventive from the Baie des Chaleurs region where abundant and seemingly native.

Lappula echinata Gilib. Waste land, railroad yards, etc., apparently frequent, but nowhere abundant.

* *Symphytum asperum* Lepechin; Macbride, Rhodora, xviii. 23 (1916). *S. asperrimum* Donn. Yarmouth Co.: waste land, Yarmouth.

** Mertensia maritima (L.) S. F. Gray, forma **albiflora**, n. f., corollis albidis.

Corollas whitish.—Nova Scotia: gravelly barrier beach, Sand Beach, Yarmouth Co., July 12, 1920, *Fernald & Linder*, no. 22,349 (type in Gray Herb.). See p. 102.

Verbena hastata L. Not seen west of Hants Co.

Teucrium canadense L., var. littorale (Bickn.) Fernald. Gravelly coast of Yarmouth Co.: Rockville; Eel Lake; Argyle. On Sable Island and the eastern coast of New Brunswick and southwestern coast of Prince Edward Island. See p. 142.

Nepeta hederacea (L.) Trevisan. We have two well-marked varieties of *Nepeta hederacea* introduced into North America. Typical *N. hederacea* with the corolla 1.6–2.2 cm. long is apparently rare in eastern Canada. I have seen it from Charlottetown, Prince Edward Island and from a cellarhole at Arcadia, Nova Scotia (*Pease & Long*, no. 22,366). The commoner plant of eastern Canada has the corolla 1–1.5 mm. long and its leaves are inclined to be red or reddish. This is

N. hederacea, var. (*parviflora* Benth.) Druce, Brit. Pl. 57 (1908).

Judging from the representation before me the two varieties are not uniformly distributed in northeastern America, the representation of specimens from Newfoundland to New England being as follows. Newfoundland: type, 0; var. *parviflora*, 2. Quebec: type, 0; var., 1. Prince Edward Island: type, 1; var., 1. New Brunswick: type, 0; var., 2. Nova Scotia: type, 1; var., 6. Maine: type, 5; var. 11. New Hampshire: type, 3; var., 4. Vermont: type, 6; var., 2. Massachusetts: type, 27; var., 18. Rhode Island: type, 0; var., 11. Connecticut: type, 6; var., 2.

Stachys palustris L. Roadside ditches, Sand Beach (Yarmouth) and Barrington and collected by others about various ports eastward.

True *S. palustris* of Europe is clearly only an introduced plant in eastern America, occurring about ports, on waste land, in ditches, etc. from southeastern Newfoundland and Gaspé Co., Quebec to Ottawa, south, chiefly near the coast, to New Jersey. In this introduced plant the calyx bears stipitate glands mixed with the long glandless hairs and the pubescence of the stem is short and appressed on the sides, longer on the angles. The indigenous plant of alluvial thickets, river terraces and other rich soil from the Penobscot Valley in Maine to Ontario and southward is var. *homotricha* Fernald, in which the calyx lacks stipitate glands and the pubescence of the sides of the stem is elongate, often as long as on the angles.

** Lycopus uniflorus Michx., forma **flagellaris**, n. f., apicibus caulis ramorumque valde elongatis flagelliformibus deinde radicantibus.

Tips of the stem and branches much elongated, flagelliform, finally rooting.—Nova Scotia: sandy and cobbly margin of Pottle's Lake, North Sydney, August 30, 1920, *Bissell & Linder*, no. 22,387 (type in Gray Herb.).

L. uniflorus, var. ovatus Fernald & St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 92 (1921). Yarmouth Co.: upper border of cobble-beach, Salmon (Greenville) Lake. See p. 156.

** *Linaria vulgaris* L., forma **leucantha**, n. f., corollis palato luteo exceptio lacteis.

Corollas, except for the yellow palate, whitish.—Nova Scotia: railroad embankment south of Amherst, July 18, 1920, *Fernald*, no. 22,407 (type in Gray Herb.). See p. 131.

L. minor (L.) Desf. A characteristic railroad weed, Springhill Junction to Elmsdale (Hants); also Sydney Mines. See p. 132.

L. canadensis (L.) Dumont. Seen by us only as a railroad weed.

Limosella subulata Ives. Yarmouth Co.: rocky and muddy tidal banks of Tusket River, Tusket. Shelburne Co.: damp sand-flats back of beach, Villagedale. Cape Breton Co.: brackish shore, Sydney Mines. See pp. 110, 150.

Gratiola aurea Pursh. Gravelly and sandy lake-shores and dryish savannahs, common in Yarmouth and southern Digby Cos. See pp. 102, 157.

Veronica longifolia L. Abundantly naturalized in roadside-thickets about towns, Yarmouth, Digby and Annapolis Cos. See p. 95.

Agalinis neoscotica (Greene) Fernald, Rhodora, xxiii. 139 (1921). Common in damp or exsiccated sandy or peaty open soil, Yarmouth, Digby and Annapolis Cos. Nova Scotian records of *Gerardia purpurea* and *G. paupercula* belong here. See pp. 138, 139, 161.

Euphrasia purpurea Reeks, var. Randii (Robinson) Fernald & Wiegand, Rhodora, xvii. 188 (1915). Frequent in turfy soil or on borders of thickets near the coast. Often the white-flowered forma albiflora Fernald & Wiegand, l. c. See pp. 99, 139.

E. canadensis Townsend; Fernald & Wiegand, l. c. 195. Yarmouth Co.: dry rocky open thickets near Randel Lake, Argyle; exsiccated roadside, Pubnico. Shelburne Co.: pastured open woods, Villagedale; recently burned clearing and grassy roadsides, Barrington. See p. 149.

E. americana Wettst. Common throughout, on roadsides and in sterile fields.

E. stricta Host; Fernald & Wiegand, l. c. 197. Shelburne Co.: pastured open woods, Villagedale; grassy roadside, Barrington.

* Utricularia geminiscapa Benj. *U. clandestina* Nutt. Common in bog-pools and peaty quagmires. Our stations are as follows. Yarmouth Co.: barrens near Goose Lake, Argyle; near head of Abram River; St. John Lake, Springhaven. Digby Co.: Tiddville;

Centerville. SHELBURNE CO.: Villagedale; Barrington. VICTORIA CO.: Kidstone Island, Great Bras d'Or Lake. See pp. 142, 161.

* U. MINOR L. In shallow pools or films of water or in lake-margins. YARMOUTH CO.: Beaver Lake; Tusket Falls. DIGBY CO.: Little River, Tiddville. HANTS CO.: Five-Mile River. HALIFAX CO.: Shubenacadie Grand Lake.

* U. GIBBA L. YARMOUTH CO.: shallow margin and small pools in beach of Jassy Lake, Lake Annis. See p. 143.

U. INTERMEDIA Hayne. Apparently common, but rarely flowering. See p. 141.

* U. PURPUREA Walt. DIGBY CO.: quiet pools in Little River and pond-holes in savannah east of Tiddville. YARMOUTH CO.: deep water of Trefry's Lake, Arcadia; Butler's (Gavelton) L., Gavelton; Kegeshook L. See pp. 145, 161.

* U. RESUPINATA B. D. Greene. DIGBY CO.: muddy margin of Midway (Centerville) Lake, Centerville. See p. 163.

** U. SUBULATA L. Characteristic of wet sandy and peaty lake-margins of Yarmouth and southern Digby Cos. Our stations are as follows: Cedar Lake; Beaver L.; Jassy L., Lake Annis; Salmon (Greenville) L.; Trefry's L., Arcadia; Butler's (Gavelton) L., Gavelton; Clearwater L., Belleville; Randel L. and Sand Pond, Argyle; Great Pubnico L. Always growing with and clearly passing into

** U. SUBULATA L., forma **cleistogama** (Gray), n. comb. *U. subulata*, var. *cleistogama* Gray, Syn. Fl. N. A. ii. pt. 1. 317 (1878). *U. cleistogama* (Gray) Britton, Trans. N. Y. Acad. Sci. ix. 12 (1889). *Setiscapella cleistogama* (Gray) Barnhart in Britton & Brown, Ill. Fl. ed. 2, iii. 231 (1913). See pp. 100, 108, 142, 143, 169.

GALIUM TRIFIDUM L. Springy and boggy spots, locally throughout, much less common than G. CLAYTONI Michx. and G. PALUSTRE L.

* G. TRIFIDUM, var. HALOPHILUM Fernald & Wiegand, RHODORA, xii. 78 (1910). Brackish shores and borders of salt marshes. YARMOUTH CO.: Chebogue. VICTORIA CO.: Kidstone Island. CAPE BRETON CO.: Sydney Mines. See p. 105.

* G. TINCTORIUM L. YARMOUTH CO.: thickets and swales bordering Salmon (Greenville) Lake; boggy swale by Tusket River, Tusket Falls. See p. 104.

Earlier records of *G. tinctorium* from Nova Scotia seem to belong to the common G. PALUSTRE L.

** *Lonicera Periclymenum* L. The European Woodbine, one of the glories of Yarmouth arbors, is becoming naturalized in roadside fence-rows.

VIBURNUM ALNIFOLIUM Marsh. Not seen south of Digby Neck. See pp. 134, 136.

V. OPULUS L., var. AMERICANUM (Mill.) Ait. Occasional from Cumberland and Hants Counties to Cape Breton. See p. 137.

Valeriana officinalis L. Occasional escape to roadsides.

** Eupatorium verticillatum Lam. acc. to Wiegand, Rhodora, xxii. 62 (1920) = E. purpureum L. acc. to Mackenzie, ibid. 165 (1920). Yarmouth Co.: cobbly or bushy borders of Salmon (Greenville) Lake; sandy and rocky border of Tusket River, Tusket Falls; gravelly margin of Tusket (Vaughan) Lake; sandy and cobbly beach of Fanning L., Carleton. See p. 147.

I do not undertake to settle which name should be applied to this coastal plain species. The very fact that two such students as Wiegand and Mackenzie, after prolonged and independent study of the literature, should arrive at such different conclusions is sufficient indication that the identity of the Linnean species cannot be finally settled without close comparisons by someone, who thoroughly understands the plants involved, of the various critical specimens in the Old World herbaria.

E. maculatum L. acc. to Wiegand, l. c. 64 (1920) = E. Bruneri Gray, acc. to Mackenzie, l. c. (1920). Rich thickets and swales, Digby Neck to Halifax Co. and Cape Breton.

Solidago latifolia L. Locally in rich woods or on calcareous slopes, Digby Neck to Cape Breton. See pp. 164, 170.

S. bicolor L. Rare or wanting in the southwest; not seen in Shelburne, Yarmouth and southern Digby Cos.

S. uniligulata (DC.) Porter. Abundant on wet or dryish peaty barrens[1]. Macoun's records of *S. uliginosa* and *S. racemosa* ("*S. humilis*") belong here. There are other records of *S. uliginosa* but I have seen no material from Nova Scotia. See p. 157.

S. juncea Ait. Not seen in Queens, Shelburne and Yarmouth Cos.

S. nemoralis Ait. Rare or wanting in the southwest; not seen in Queens and Shelburne Cos., and seen in Yarmouth Co. only at Carleton. Seeming to prefer argillaceous soil.

** S. Elliottii T. & G. Abundant, often dominant, in boggy clearings, swales, damp thickets, spruce and maple swamps and lake shores, Yarmouth Co. eastward at least to Queens. See pp. 144, 151, 157, 169.

* S. rugosa Mill., var. villosa (Pursh) Fernald. Apparently frequent throughout.

Too much of the Nova Scotian material is intermediate between *S. uniligulata* and *S. neglecta* T. & G. In Massachusetts, too, these plants are not specifically separable and it seems that Gray was correct in treating them as varieties of one species. Since, however, *S. uniligulata* antedates *S. neglecta* they should be combined under the former not under the latter name, which was retained by Gray. The varieties of *S. uniligulata* are as follows.

S. uniligulata (DC.) Porter, var. **terrae-novae** (T. & G.), n. comb. *S. Terrae-Novae* T. & G. Fl. N. A. ii. 206 (1842).

Var. **neglecta** (T. & G.), n. comb. *S. neglecta* T. & G. l. c. 213 (1842).

** S. RUGOSA, var. SPHAGNOPHILA Graves. Occasional in spruce swamps and savannahs, Yarmouth and Shelburne Cos. See p. 151.

S. CANADENSIS L. Rare and local in Yarmouth, Shelburne and Queens Cos. Common farther east. See pp. 143, 151.

* S. SEROTINA Ait. VICTORIA Co.: moist thicket near mouth of Bevis Brook, Port Bevis. See p. 170.

S. SEROTINA, var. GIGANTEA (Ait.) Gray. YARMOUTH Co.: gravelly thicket by Fanning Lake, Carleton. ANNAPOLIS Co.: railroad bank, Middleton.

S. GRAMINIFOLIA (L.) Salisb. Sandy or gravelly shores and damp thickets, apparently throughout. Less common than var. NUTTALLII (Greene) Fernald. See p. 157.

** S. TENUIFOLIA Pursh. YARMOUTH Co.: sandy roadside, Sloane Lake, Pleasant Valley. HALIFAX Co.: gravelly beach of Third Lake, Windsor Junction. See p. 160.

** S. TENUIFOLIA, var. **pynocephala**, n. var., caulibus simplicibus vel subsimplicibus superne vix ramosis 3–7 dm. altis; foliis crassis lineari-oblongis vel lineari-lanceolatis obtusis vel acutiusculis vix attenuatis valde adscendentibus nec patentibus nec revolutis, mediis 2–5 cm. longis 2–6 mm. latis; corymbis densissime glomerulatis vel glomerulis segregatis 1–5 cm. diametro; involucris valde glutinosis turbinato-hemisphaericis, bracteis apice viridibus glanduloso-ciliatis; ligulis plerumque oblongis. —Peaty, gravelly or sandy margins of lakes, Yarmouth, Shelburne and Queens Counties, NOVA SCOTIA. The following are characteristic. SHELBURNE Co.: shallow water at sandy and cobbly margin of Clement Pond, Barrington, August 9, 1920, *Fernald, Long & Linder*, no. 22,736. YARMOUTH Co.: sandy and peaty margin of Great Pubnico Lake, September 6, *Fernald, Long & Linder*, no. 22,746; shallow water at rocky margin of Goose Lake, Argyle, August 4, *Fernald & White*, no. 22,735; rocky margin of Randel Lake, Argyle, August 4, *Long & Linder*, no. 22,734; wet gravelly margin of Butler's (Gavelton) Lake, Gavelton, September 2, 1920, *Fernald & Long*, no. 22,744; cobbly margin of East Branch of Tusket River, Gavelton, September 4, *Fernald, Long & Linder*, no. 22,745; sandy and cobbly beach of Fanning L., Carleton, October 7, *Fernald & Linder*, no. 22,741; boggy savannah bordering St. John Lake, Springhaven, October 8, *Fernald & Linder*, no. 22,742; peaty and cobbly margin of Salmon (Greenville) Lake, July 31, *Fernald & White*, no. 22,733; wet lower peaty and cobbly beach of Salmon (Greenville) Lake, August 13, *Fernald, Bissell, Graves, Long & Linder*, no. 22,743 (TYPE in Gray Herb.); sandy and peaty beach of Trefry's Lake, Arcadia, July 15, *Fernald & Pease*, no. 22,727, July 29, *Fernald & Long*, no. 22,732; cobbly margin of Darling Lake, October 6, *Fernald & Linder*, no. 22,738.

Differing from typical *S. tenuifolia* in its simple habit; erect, very thick, firm, broad, short and obtuse or merely acutish leaves; its

very compact and small inflorescence; and more glutinous involucre, with often broader bracts, the outer with dark-green summits and glandular-ciliate margins. In typical *S. tenuifolia* the stem is freely branched above, forming a loose corymb up to 4 dm. broad; the leaves linear-attenuate and sharply acute, thin and inclined to become revolute, the primary ones 4–9 cm. long, 1.5–4 mm. broad; the often only slightly glutinous, though sometimes extremely gummy, involucres commonly with slightly narrower bracts with less pronounced green tips and margins only slightly ciliolate; and the rays usually a little narrower. See pp. 143, 144, 170.

Too many collections, however, show direct transitions in all these characters to allow the specific separation of the Nova Scotian plant. The material from Cedar Lake (nos. 22,726, 22,728, 22,729, and 22,739), collected by different parties at remote points on the shore, has all the character of the heads of extreme var. *pycnocephala;* but the leaves, though firm and ascending, are slenderly attenuate, the primary ones 3.5–7 cm. long, and most of the material is freely branching and with loose corymbs. Other collections (that from Darling Lake above cited, and from lakes at Kemptville), though simple or subsimple, have the leaves slenderly attenuate; while a large colony on dry sand at Sloane Lake, near Pleasant Valley (no. 22,748) is very typical *S. tenuifolia.* Farther south, much of the pond-margin and quagmire material from Cape Cod, though with the foliage of typical *S. tenuifolia*, has heads too close to those of var. *pycnocephala;* while the plants of the Saco valley in Maine and New Hampshire, as well as some from Cape Cod, are often simple or subsimple.

** Aster macrophyllus L., var. velutinus Burgess. Frequent from Yarmouth Co. to Queens.

A. radula Ait. One of the commonest plants of boggy barrens, peaty swales and damp thickets.

* A. vimineus Lam. Digby Co.: thickets and steep wooded banks of Sissiboo River, Weymouth.

* A. vimineus, var. saxatilis Fernald. Yarmouth Co.: gravelly margin of Tusket (Vaughan) Lake; cobble-beach of Butler's (Gavelton) L., Gavelton; boggy savannah bordering St. John L., Springhaven. Digby Co.: sandy beach of Lily L., Sandy Cove.

A. junceus Ait. Yarmouth Co.: wet savannah bordering Butler's (Gavelton) Lake, Gavelton.

A. longifolius Lam. Frequent on shores of lakes and streams.

* A. foliaceus Lindl.; Fernald, Rhodora, xvii. 13 (1915). At scattered stations in Yarmouth and Digby Cos. Flowering earlier

than *A. longifolius* and *A. novi-belgii*, our flowering material collected July 6–25.

A. NEMORALIS Ait. Dominant on peaty barrens, bogs and lake-margins, Digby and Yarmouth Cos. to southern Guysborough Co. and Cape Breton. See p. 90.

A. NEMORALIS, var. MAJOR Peck, N. Y. State Mus. Rep. xlvii. 155—reprint, 29 (1894). Var. *Blakei* Porter, Bull. Torr. Bot. Cl. xxi. 311 (July 20, 1894). See p. 156. Frequent in wet woods, thickets and moist clearings, of similar range to the last.

On p. 156 I gave the date of publication of var. *major* as Jan., 1894. Dr. H. D. House has since informed me that the date of publication is very uncertain. "The State Printer records indicate that the report was received for printing March 1st . . . it is extremely unlikely that the printing was accomplished before July 1st."

ERIGERON HYSSOPIFOLIUS Michx. Crevices and talus of gypsum-cliffs, Five-mile River (Hants) and Port Bevis (Victoria). See pp. 64, 136, 170.

* E. PHILADELPHICUS L. DIGBY Co.: damp roadside, Hectanooga.

ANTENNARIA PETALOIDEA Fernald, var. SUBCORYMBOSA Fernald RHODORA, xvi. 133 (1914). YARMOUTH Co.: dry gravelly railroad embankment, Arcadia. ANNAPOLIS Co.: dry sandy thickets and borders of woods, Middleton. HANTS Co.: dry open gravelly banks of Five-mile River. COLCHESTER Co.: seepy slope, Truro.[1] See p. 103.

[1] A close ally of *A. petaloidea* which demands recognition is

ANTENNARIA **appendiculata**, n. sp. Planta laxe humifusa, stolonibus flagelliformibus ad 1 dm. elongatis apice foliatis; foliis basilaribus spathulato-obovatis 1.5–3 cm. longis 0.5–1.1 cm. latis, supra laxe canescento-tomentosis 1-nerviis; caule florifero 1.5–2.5 dm. alto albido-tomentoso; foliis caulinis 6–9 apice appendiculatis, appendicula scariosa plana colorata 3.5–5 mm. longa; capitulis femineis 1–6 corymbosis; involucro 8–11 mm. alto; bracteis 3–4-seriatis, exterioribus 4–6 mm. longis oblongis obtusis vel subtruncatis plus minusve fulvo- vel purpureo-maculatis, interioribus lanceolato-attenuatis gilvis paulo fimbriatis; corollis 5.3–5.6 mm. longis; stylo flavescente ramibus 0.5 mm. longis; achaeniis 1.2 mm. longis papillosis; setis pappi longioribus 7–8 mm. longis; planta mascula ignota.

Plant loosely humifuse; the stolons flagelliform, up to 1 dm. long, leafy at tip: rosette-leaves spatulate-obovate, 1.5–3 cm. long, 0.5–1.1 cm. wide, loosely canescent-tomentose above, 1-nerved: flowering stem 1.5–2.5 dm. high: cauline leaves 6–9, terminated by a flat scarious colored appendage 3.5–5 mm. long: pistillate heads 1–6, corymbose: involucre 8–11 mm. high: bracts 3–4-seriate; the outer 4–6 mm. long, oblong, obtuse or subtruncate, more or less brown- or purple-blotched; inner lance-attenuate, creamy, a little fimbriate: corollas 5.3–5.6 mm. long; style yellowish, its branches 0.5 mm. long: achenes 1.2 mm. long, papillose: longer pappus-bristles 7–8 mm. long: staminate plant unknown. QUEBEC: dry wooded knolls, banks of the Grand River, Gaspé Co., June 30–July 3, 1904, *Fernald*, distributed as *A. petaloidea* (TYPE in Gray Herb.).

Quickly distinguished from the more southern and western *A. petaloidea* by the flat scarious appendages which terminate most of the cauline leaves.

A. CANADENSIS Greene. Apparently frequent throughout.

A. NEODIOICA Greene. Common.

** A. NEODIOICA, var. GRANDIS Fernald. YARMOUTH Co.: damp rocky barren north of Tusket (Vaughan) Lake. DIGBY Co.: dryish gravelly bank, Meteghan; dry open bank near Little River, east of Tiddville. HANTS Co.: spruce woods along Five-mile River. See p. 98.

** A. NEODIOICA, var. **chlorophylla**, n. var., a forma typica recedit

A. petaloidea throughout its range has the middle and upper cauline leaves tipped by a firm subulate-aristate appendage, only the very uppermost or bracteal with the appendage flattened; and when well developed it is taller and with full corymbs of 5–15 heads.

Typical *A. petaloidea*, which occurs from Rimouski Co., Quebec, westward and southward, has the basal leaves spatulate to spatulate-obovate and rounded at apex; the cauline leaves at regularly decreasing intervals up to the inflorescence; and the branches of the corymb or the pedicels mostly 0.1–3 cm. long. Var. *subcorymbosa*, which occurs from eastern Newfoundland, and Prince Edward Island to southeastern Maine and Nantucket, has the basal leaves oblanceolate and acute or acutish; the flowering stem nearly or quite without leaves for a distance of 0.7–1.7 dm. below the inflorescence and the branches of the corymb or the pedicels elongate (the lower often 0.5–1.7 dm. long). Professor Wiegand has called my attention to a characteristic plant of west-central New York which has the basal leaves of var. *subcorymbosa* but the short flowering-stem and more approximate cauline leaves of typical *A. petaloidea*. This plant is so characteristic of much of New York state that it may be called

A. PETALOIDEA, var. **noveboracensis**, n. var., foliis basilaribus oblanceolatis vel anguste obovatis acutis 1.5–4 cm. longis 0.5–1.2 cm. latis; caule florifero 0.4–2.3 dm. alto regulariter foliato; corymbo subconferto, ramibus pedicellisque brevibus; bracteis involucri petaloideis.

Basal leaves oblanceolate or narrowly obovate, acute, 1.5–4 cm. long, 0.5–1.2 cm. broad: flowering stem 0.4–2.3 dm. high, regularly leafy: corymb rather crowded; its branches and pedicels short: involucral bracts petaloid. —NEW YORK: along Beaver Brook, south of McLean, Dryden, May 17, 1918, *Eames & Wiegand*, no. 10,953; dry gravelly knolls around Malloryville bog, Dryden, May 16, 1919, *Eames;* dry bank along railroad northeast of Freeville, May 16, 1919, *Eames;* upper Cascadilla Creek, May 20, 1919, *Eames;* dry pasture, Caroline, May 18, 1918, *Eames*, no. 10,951; gravelly fields, Caroline, May 20, 1918, *Eames*, nos. 10,946 and 10,950; dry fields, east of North Pinnacle, Caroline, May 8, 1919, *Eames;* field northeast of Fir-tree Swamp, Danby, May 18, 1918, *Eames*, nos. 10,952 and 10,954; Buttermilk Creek, May 13, 1919, *Eames;* pasture, east side of Michigan Hollow Swamp, Danby, May 30, 1919, *Wiegand;* dry fields near Key Hill Swamp, Newfield, May 21, 1919, *Eames & Wiegand* (TYPE in Gray Herb.); sterile hill near Kennedy Pond, Mendon, June 2, 1917, *Eames & Metcalf*, no. 8936.

On account of its narrow leaves and rather dense corymb var. *noveboracensis* is likely to be confused with undeveloped *A. neglecta*, but in that species the upper cauline leaves instead of having firm subulate-aristate tips, bear thin scarious though often involute appendages.

foliis basilaribus anguste obovatis vel spathulato-oblanceolatis supra glabris viridibus lucidis.

Differing from the typical form of the species in having the basal leaves narrowly obovate or spatulate-oblanceolate, glabrous, green and shining above.—Prince Edward Island and Nova Scotia to New York. Prince Edward Island: open woods, Brackley Point, June 30, 1888, *J. Macoun*, no. 11,285; dry banks and open woods, O'Leary, July 3, 1914, *Fernald & St. John*, no. 11,199; dry sandy soil, Morell, June 29, 1914, *Fernald & St. John*, no. 11,198. Nova Scotia: pasture-fields, Yarmouth, May 28, 1910, *J. Macoun*, no. 80,745; moist mixed woods and thickets, Meteghan, July 7, 1920, *Fernald & Long*, no. 22,832. Maine: gravelly bank, Orono, June 4, 1898, *Fernald*, no. 2364 (type in Gray Herb.); slate ledges, Leadbetter Falls, Township iv, Range 18, Somerset Co., July 6, 1917, *St. John & Nichols*, no. 2500; dry bank, Perry, July 9, 1909, *Fernald*, no. 2247; dry rocky banks, Cutler, July 4, 1902, *Kennedy, Williams, Collins & Fernald;* roadside north of Town Hill, Mt. Desert Island, July 3, 1897, *Rand;* Somesville, July 7, 1897, *Rand;* dry field, Bristol, May 26, 1898, *Chamberlain*, no. 565; North Berwick, May 30, 1899, *Parlin*, no. 1150. Vermont: roadside, Willoughby, June 9, 1898, *Williams;* Proctor lot, Rutland, June 6, 1899, *Eggleston;* Bald Mt., Shrewsbury, June 6, 1899, *Eggleston.* Massachusetts: grassy bank, Leicester, May 30, 1912, *Hunnewell & Wiegand;* shaded roadside, Southbridge, May 25, 1900, *Harper;* Orange, May 11, 1912, *Fernald, Hunnewell & Wiegand;* rocks, Whatley Glen, Whatley, May 17, 1913, *Harger & Fernald;* old pasture, Chester, May 17, 1913, *Weatherby & Bean;* wet ground, Savoy, May 31, 1901, *Hoffmann;* rocky open bank, Sheffield, May 30, 1919, *Bean & Fernald.* Rhode Island: sheltered roadside banks and grassy clearings bordering thickets near Nayatt, Barrington, May 30, 1911, *Fernald.* Connecticut: bank, Burnside, May 3, 1903, *Weatherby.* New York: along roadside, high on the bluffs of West Canada Creek, East Herkimer, June 4, 1904, *Haberer*, no. 3079; in shade of arbor vitae, border of Hidden Lake, Litchfield, June 15, 1902, *Haberer*, no. 1717; hillside slopes in shade of arbor vitae, border of Cedar Lake, Litchfield, June 15, 1902, *Haberer*, no. 1718; sandy knolls, Deerfield, May 16, 1910, *Haberer*, no. 2014, in part.

On account of the bright green upper surfaces of the basal leaves confused with *A. canadensis* Greene, under which name most specimens have been distributed. Var. *chlorophylla*, however, has the heads of *A. neodioica* and its cauline leaves are clearly of that species. In *A. canadensis* the upper cauline leaves are terminated by an elongate usually twisted thin scarious appendage; in *A. neodioica* and all its varieties the upper cauline leaves are merely subulate-tipped or mucronate. Macoun's no. 11,285 from Prince Edward Island was

cited by Greene as part of his *A. canadensis*, but the remaining specimens cited by him, including the first (from Lake Mistassini) are alike in having the characteristic flag-like appendage of the upper leaves and the longer and paler involucre so typical of *A. canadensis*.

Gnaphalium sylvaticum L. Woodland paths, roadsides and pastured woods, perhaps introduced, Baddeck, Port Bevis and George River. See p. 164.

* *Ambrosia trifida* L. Railroad gravel, Sydney Mines.

* *Rudbeckia laciniata* L. Escaped from cultivation to roadside thicket, Barrington.

** Coreopsis rosea Nutt. Sandy, gravelly or peaty beaches and margins of the Tusket system, Yarmouth Co.: Tusket (Vaughan) Lake; Butler's (Gavelton) Lake and East Branch of Tusket, Gavelton. See p. 160.

Bidens cernua L. We saw no evidence of this generally common species in the western counties of Nova Scotia.

B. connata Muhl., var. petiolata (Nutt.) Farwell; Fernald, Rhodora, x. 200 (1908). Yarmouth Co.: boggy swale, Quinan.

** B. connata Muhl., var. **inundata**, n. var., foliis primariis inferioribus lobatis, lobis 2–4 basilaribus divergentibus decurrentibus, lobo terminali foliisque superioribus lanceolato-attenuatis anguste serratis vel incisis, petiolis gracilibus vix marginatis: achaeniis exterioribus 5.5 mm. longis, interioribus 7–8 mm. longis aristis marginalibus 3–3.5 mm. longis.

Lower primary leaves lobed; the 2–4 basal lobes divergent and decurrent; the terminal lobe and the upper leaves lance-attenuate, slenderly serrate or incised; the petioles slender, scarcely margined: outer achenes 5.5 mm. long; the inner 7–8 mm. long, with marginal awns 3–3.5 mm. long.—Nova Scotia: wettest portion of a springy sphagnous bog, Sand Beach, September 7, 1920, *Fernald, Long & Linder*, nos. 22,869, 22,870, October 6, 1920, *Fernald & Linder*, no. 22,871 (type in Gray Herb.); sandy brooksides and springy ditches, Baddeck, August 27, 1920, *Fernald & Long*, no. 22,866; about pools at bases of gypsum cliffs, Port Bevis, August 27, 1920, *Fernald & Long*, no. 22,867.

Closely simulating var. *gracilipes* Fernald, Rhodora, xxi. 103 (1919) of the Cape Cod quagmires but with much larger achenes; var. *gracilipes* having the outer achenes 3–4 mm. long, the inner 4.5–5 mm. long and with awns only 2–2.5 mm. long. See p. 167.

* *Matricaria suaveolens* (Pursh) Buchenau. A common roadside weed wherever we went.

* *Artemisia Stelleriana* Bess. Shelburne Co.: upper border of gravelly strand, Villagedale.

Petasites palmatus (Ait.) Gray. Cumberland Co.: swampy woods and thickets, Springhill Junction. See p. 132.

Senecio sylvaticus L. Thoroughly naturalized, possibly indigenous. One of the characteristic plants of recently burned clearings, borders of woods, or gravelly or rocky shores. Sometimes occurring as a railroad weed but more often found in semi-natural habitats, as on the coast of Maine (see Fernald & Wiegand, Rhodora, xii. 106).

Senecio pauperculus Michx., var. **Balsamitae** (Muhl.), n. comb. *S. Balsamitae* Muhl. ex Willd. Sp. Pl. iii. 1998 (1804). *S. aureus*, ε. *Balsamitae* (Muhl.) T. & G. Fl. N. A. ii. 442 (1843), at least as to name-bringing synonym. *S. oboratus*, var. *umbratilis* Greenm. Monogr. Senecio. Teil 1: 24 (1901), in Engl. Bot. Jahrb. xxxii. 20 (1902) and Ann. Mo. Bot. Gard. iii. 115 (1916), at least as to type specimen. *S. gaspensis* Greenm. Ann. Mo. Bot. Gard. iii. 138 (1916).

Typical *Senecio pauperculus*, as shown by Michaux's type specimen and by a photograph of it secured by the writer in 1903, is the northern extreme of the plant with basal leaves 0.3–1 cm. broad; the lower and median cauline very slender, mostly 1–6 mm. wide; the upper very reduced, linear or subulate and mostly entire. This plant is abundant in Labrador and Newfoundland, thence to British Columbia where it passes as *S. flavovirens* Rydb. (such plants as *Lyall*, Lower Frazer River, and *J. M. Macoun*, no. 69,356 from Similkameen River, specimens cited by Greenman as *S. flavovirens*). Greenman distinguishes the two as follows:

"Eastern species.....69. *S. pauperculus.*
Western species.....70. *S. flavovirens*"

but without any morphological characters the two are not satisfactorily separated.

In its typical form *S. pauperculus* occasionally extends southward to northern Maine and northern Michigan, but southward it is chiefly represented by var. *Balsamitae*, in which the basal leaves are larger, mostly 0.8–3 cm. broad; the lower and median cauline larger, the largest 0.6–2.5 cm. broad; and the upper mostly well developed and pinnatifid.

We saw var. *Balsamitae* in Nova Scotia on the faces and talus of gypsum-cliffs at Five-mile River (Hants) and at Port Bevis (Victoria).

* *Arctium nemorosum* Lejeune; Fernald & Wiegand, Rhodora, xii. 45 (1910). Waste ground, Digby and Weymouth.

** *Centaurea nigrescens* Willd. Annapolis Co.: roadsides and borders of fields, Middleton, growing with the common *C. nigra*.

** *Arnoseris minima* (L.) Dumort. *A. pusilla* Gaertn. Yarmouth

Co.: gravelly railroad bed near the station, Belleville. See p. 142.

* Lactuca hirsuta Muhl. Yarmouth Co.: dry rocky clearing northwest of Tusket (Vaughan) Lake.

Prenanthes altissima L. Rich woods, Digby Neck to Cape Breton.

P. altissima, forma **hispidula** (Fernald), n. comb. Var. *hispidula* Fernald in Brainerd, Jones & Eggletson, Fl. Vt. 89 (1900). Digby Co.: rich moist woods, Sandy Cove.

Hieracium Pilosella L. Too common along the line of the Canadian National eastward.

* *H. pratense* Tausch. Fields and railroad banks, Annapolis and Digby Cos.

H. paniculatum L. Yarmouth Co.: border of mixed woods by Randel Lake, Argyle.

Explanation of Plate 130.

Fig. 1. Northeastern Range of *Carex Howei*. 2. Southeastern Range of *Empetrum nigrum*. 3. Range of *Ilex glabra*. 4. Northern Range of *Utricularia subulata*. 5. Range of *Poa costata*. 6. Northeastern Range of *Cystopteris bulbifera*. 7. Range of *Erigeron hyssopifolius*. 8. Range of *Amelanchier canadensis*. 9. Portion of Range of *Carex scabrata*. 10. Eastern Range of *Lilium canadense*. 11. Range of *Schizaea pusilla*. 12. Ranges of *Sabatia decandra* (solid) and *S. Kennedyana* (in ellipse). 13. Northeastern Range of *Polygonum robustius*. 14. Range of *Eleocharis tuberculosa*. 15. Northeastern Range of *Potamogeton pulcher*. 16. Northeastern Range of *Panicum longifolium* (Var. *Tusketense* in ellipse). 17. Range of Genus *Lophiola*.

Barratt, Torrey and Schweinitz: a Correction and a Discrepancy.—Mr. C. L. Shear, one of the editors of the recently published correspondence of Schweinitz and Torrey (Mem. Torr. Bot. Club, xvi. no. 3, July, 1921) has called my attention to a discrepancy between a statement in my paper on Joseph Barratt (Rhodora xxiii. 123) and one of Torrey's letters. I said that Barratt, in company with Torrey, visited Schweinitz at Bethlehem in the autumn of 1825. There is not only no mention of such a visit in the correspondence, but in a letter dated "December—1825," Torrey writes to Schweinitz, "I am greatly rejoiced to hear, through our friend Mr. Halsey, of your safe return after so tedious an absence." The tedious absence was a trip to Europe which Schweinitz made in the spring and summer of 1825: Torrey could hardly have said in December that he had learned of Schweinitz's return through a third person if he had seen him in the autumn.

Through the kindness of Mr. John H. Sage, I have had the privilege of re-examining Barratt's autobiographical memoranda. These show that that part of my statement placing the meeting with Schweinitz at Bethlehem was based on a misreading of Barratt's rather crabbed manuscript. He wrote, "Saw Mr. Schweinitz of

Bethlehem;" I read it "Saw Mr. Schweinitz at Bethlehem." The meeting, it seems, actually took place at New York early in October, 1825. Barratt was there on his way back to Philipstown after a visit to Middletown. Schweinitz had, no doubt, just reached New York on his return from Europe. They met, Barratt says, at the Moravian Church where "Mr. Schweinitz had been preaching that evening." He adds that "Dr. Torrey was introduced at the same time" and that he (Barratt) "afterwards went up the North River in company with Mr. Schweinitz."

I see no obvious explanation of the contradiction between Barratt's explicit statement that Torrey and Schweinitz met in October, 1825, and the very plain implication of Torrey's letter that they did not. There is, however, nothing to show when Barratt's memoranda were written down: if long after the event, he may have confused two occasions in memory. Schweinitz did go up the North River to visit Torrey at West Point in March, 1827; it is just possible that Barratt was along at that time, though so far as I know, there is no evidence to that effect. Unless we can suppose some such slip of memory on his part, the contradiction must remain, at least for the present, unexplained.—C. A. Weatherby, East Hartford, Connecticut.

Vol. 23, no. 275, including pages 247 to 278 and plate 133, was issued 27 February, 1922.

ERRATA

Additional for vol. 22:

Page 173, line 24, for 91817 read 90,817.
" 197, " 2, for **scientlfic** read **scientific.**

Vol. 23:

Page 18, lines 7–8, *for* 'formerly abundant but now very rare' *read* 'now very rare but perhaps destined to become more abundant.'
Page 55, line 23, for *crurisgalli* read *crusgalli.*
No. 269, first page of cover, for 118 read 113.
No. 269, first page of cover, for 113 read 118.
Page 103, line 25, for *A.* read *Amelanchier.*
" 130, " 22, for *A.* read *Amelanchier.*
" 136, " 23, for *retrosa* read *retrorsa.*
" 137, " 6, *for* Mowry *read* Morong.
" 138, " 10, for *Coremia* read *Corema.*
" 139, " 19, *for* diagonistic *read* diagnostic.
" 139, " 31, for *Primila* read *Primula.*
" 146, " 32, for *robustor* read *robustior.*
" 149, " 6, *for* scape *read* scapes.
" 151, " 3, for *Elliotii* read *Elliottii.*
" 152, " 5, for *J.* read *Juncus.*
" 159, " 9, for *Conioselinium* read *Conioselinum.*
" 159, " 12, *for* pronounced *read* pronounced.
" 200, " 21, for 270 read 271.
" 244, " 41, *for* planst *read* plants.

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